

WHAT IS CLAIMED IS:

1. A transport apparatus having a guide rail for transporting an article, comprising:
a vehicle that moves along the guide rail;

5 a holding means supported on the vehicle, for holding the article and moving the article vertically;

a wobble prevention means supported on the vehicle, and movable between a support position where it abuts against a lateral surface of the article and a release position where abutting against a lateral surface of the article is released, for, in the support position,

10 keeping the article from wobbling in at least one direction; and

a rotor provided in the wobble prevention means and capable of rotation about a vertical shaft, and movable toward and away from a lateral surface of the article, and urged toward a lateral surface of the article;

wherein the rotor abuts against the article when the wobble prevention means is in
15 the support position.

2. The transport apparatus according to claim 1, further comprising:

means for fastening the rotor, said fastening means being capable of switching between a fastened state where it inhibits rotation of the rotor and a non-fastened state where
20 it permits rotation of the rotor.

3. The transport apparatus according to claim 1, further comprising:

a fall prevention member supported on the vehicle, which is capable of moving between a receiving position where at least a part of the member is located below a bottom
25 surface portion of the suspended article and can receive the bottom surface portion of the article and a retreated position where it is retreated from below the suspended article;

wherein the wobble prevention member is provided in the fall prevention member

in such a manner that it is switched to the support position by changing the position of the fall prevention member to the receiving position and is switched to the release position by changing the position of the fall prevention member to the retreated position.

- 5 4. The transport apparatus according to claim 3,
 wherein the fall prevention member is provided at a front side position and at a rear
 side position in the front to back direction of the vehicle with respect to the article; and
 wherein the rotor abuts on a central portion, in the vehicle width direction, of a
lateral surface portion of the article.

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5. The transport apparatus according to claim 3,
 wherein the fall prevention member is moved between the receiving position and
the retreated position by pivoting about a horizontal shaft.

- 15 6. The transport apparatus according to claim 1,
 wherein the wobble prevention member has a pivoting member, which is pivotably
supported in a rockable manner such that its front end portion is moved toward and away
from a lateral surface portion of the article and which is urged toward a lateral surface
portion of the article by an elastic urging means;

- 20 wherein the rotor is attached to the free end portion of the pivoting member such
that the rotor can rotate about a vertical shaft.

7. The transport apparatus according to claim 2,
 wherein the fastening means is an electromagnetic brake.

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- / 8. A transport apparatus having a guide rail for transporting an article, comprising:
 a vehicle that moves along the guide rail;

an ascending/descending actuator mechanism supported on the vehicle and having a plurality of wires and a motor operatively connected to the plurality of wires;

a holding unit supported by the ascending/descending actuator mechanism via the wires, and capable of moving the article up to a transporting position due to driving of the motor, and having a plurality of arms for holding the article;

a fall prevention member supported on the vehicle and capable of moving between a position extending below a bottom of the article and a position retreated from below the bottom of article, when the article is in the transporting position;

an arm capable of pivoting about a first shaft fastened to the fall prevention member; and

a roller rotatable about a second shaft provided on a free end of the arm;

wherein the roller abuts on the article when the fall prevention member is in the position extending below the bottom of the article.

9. The transport apparatus according to claim 8, further comprising:

a brake capable of switching between a non-fastened state where it permits rotation of the roller about the second shaft and a fastened state where it does not permit rotation of the roller.

10. The transport apparatus according to claim 9,

wherein the brake is an electromagnetic brake comprising an electromagnetic coil fastened to the arm and a magnetic member fastened to the second shaft and in opposition to the electromagnetic coil.

11. The transport apparatus according to claim 10,

wherein the arm is urged in the direction of a lateral surface of the article by an urging spring.

12. The transport apparatus according to claim 10,
wherein the fall prevention member can pivot about a horizontal shaft.
- 5 13. The transport apparatus according to claim 8, further comprising:
an ascending/descending member to which the wires are attached;
wherein the holding unit is supported by the ascending/descending actuator
mechanism via the ascending/descending member; and
wherein a vertical shaft is provided between the holding unit and the
10 ascending/descending member and a motor for altering the posture of the article with respect
the vehicle about the vertical shaft is provided to one of the holding unit and the
ascending/descending member.
14. A method for transporting an article with a transport apparatus that comprises a
15 vehicle that moves along a guide rail in order to transport the article, an
ascending/descending actuator mechanism supported on the vehicle and having a plurality
of wires and a first motor that is operatively connected to the plurality of wires, a holding
unit which is supported by the ascending/descending actuator mechanism via the wires,
which is capable of moving the article up to a transporting position due to driving of the first
20 motor and which has a plurality of arms for holding the article, a vertical shaft and a second
motor provided in the holding unit for altering the posture of the article with respect to the
vehicle, a fall prevention member supported on the vehicle and capable of moving between
a position extending below a bottom of the article and a position retreated from below the
bottom of article when the article is in the transporting position, an arm capable of
25 pivoting about a first shaft fastened to the fall prevention member, and a roller capable of
rotation about a second shaft provided on a free end of the arm, the method comprising:
holding an article with the holding unit;

raising the article to a set height with the ascending/descending actuator mechanism;

abutting the roller against the article by moving the fall prevention member to a position extending below a bottom of the article;

5 raising the article up to the transporting position with the ascending/descending actuator mechanism;

altering the posture of the article about the vertical shaft by driving the second motor; and

moving the vehicle along the guide rail.

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15 15. A method for transporting an article with a transport apparatus that comprises a vehicle that moves along a guide rail in order to carry an article, an ascending/descending actuator mechanism supported on the vehicle and having a plurality of wires and a first motor that is operatively connected to the plurality of wires, a holding unit which is supported by the ascending/descending actuator mechanism via the wires, which is capable of moving the article up to a transporting position due to driving of the motor and which has a plurality of arms for holding the article, a vertical shaft and a second motor provided in the holding unit for altering the posture of the article with respect to the vehicle, a fall prevention member supported on the vehicle and capable of moving between a position extending below a bottom of the article and a position retreated from below the bottom of article when the article is in the transporting position, an arm capable of pivoting about a first shaft fastened to the fall prevention member, a roller capable of rotation about a second shaft provided on a free end of the arm, and a brake capable of switching between a non-fastened state where it permits rotation of the roller about the second shaft and a fastened state where it does not permit rotation of the roller, the method comprising:

holding an article with the holding unit;

raising the article to a set height with the ascending/descending actuator

mechanism;

abutting the roller against the article by moving the fall prevention member to a position extending below a bottom of the article;

5 raising the article up to the transporting position with the ascending/descending actuator mechanism;

moving the vehicle along the guide rail; and

switching the brake to the fastened state once movement of the vehicle has begun.

16. The method for transporting an article according to claim 15, further comprising:

10 altering the posture of the article about the vertical shaft by driving the second motor while the vehicle is moved along the guide rail.